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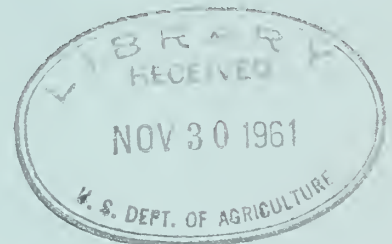
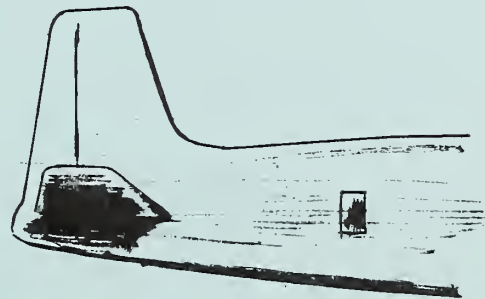
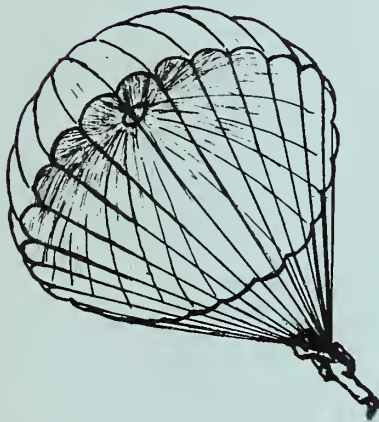
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APRIL 1961

ACCESSORIES FOR PARACARGO AND SMOKEJUMPER AIRCRAFT

BY

MISSOULA EQUIPMENT DEVELOPMENT CENTER
FOREST SERVICE, U. S. DEPARTMENT OF AGRICULTURE
MISSOULA, MONTANA



FOREST SERVICE
U. S. DEPARTMENT OF AGRICULTURE
WASHINGTON, D. C.

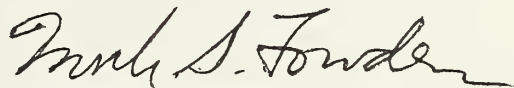
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WASHINGTON 25, D.C.

IN REPLY REFER TO

April 1961

The accessories for cargo and smokejumper airplanes described
in Technical Equipment Report No. 5700-2 are approved for
optional U. S. Forest Service use.



Merle S. LOWDEN, Director
Division of Fire Control



ACCESSORIES FOR PARACARGO AND SMOKEJUMPER AIRCRAFT

Missoula Equipment Development Center
Forest Service, U. S. Department of Agriculture
Missoula, Montana

April 1961

Cargo and smokejumper dropping technicians among the western regions are agreed that paracargo and smokejumper aircraft accessories should be standardized as much as possible. Recent interregional use of aircraft and smokejumper crews predicates this need.

Primary aircraft for paracargo and smokejumper operations are the DC-3 and the Twin Beechcraft. The Missoula Equipment Development Center has been requested to develop specifications for accessory items for these aircraft. This report illustrates and discusses briefly each item, drawings and parts lists are contained in the attached appendices.

SMOKEJUMPER SPOTTER'S WINDOW FOR TWIN BEECHCRAFT

In all Twin Beech models, except the Model E-18S, it is necessary to install spotter's floor windows to provide adequate forward vision for dropping smokejumpers. See Drawing No. ED-199-R1, Appendix A. The Model E-18S has extended fuselage and a spotter's window is cut behind the door on the left side wall enabling the spotter to look forward under the wing of the aircraft and observe the terrain during jumper flying maneuvers. In all other Twin Beechcraft models, however, the door is located in a more forward position and it is impossible for the spotter to observe oncoming terrain from the door. Some regions have used Twin Beechcraft with the baggage door on the right-hand side of the fuselage removed but it is generally agreed among smokejumpers that the floor window offers the best vision. Some smokejumper spotters prefer that the floor window be on the right side of the aircraft floor while others prefer it on the left side. Each has its advantages but the consensus is that the right side floor window is most convenient. Black lines are traced parallel to the window to facilitate alignment during the jumper flight maneuvers. The floor window must be covered with a removable cover plate at all times when not in use. (Figures 1 and 2)

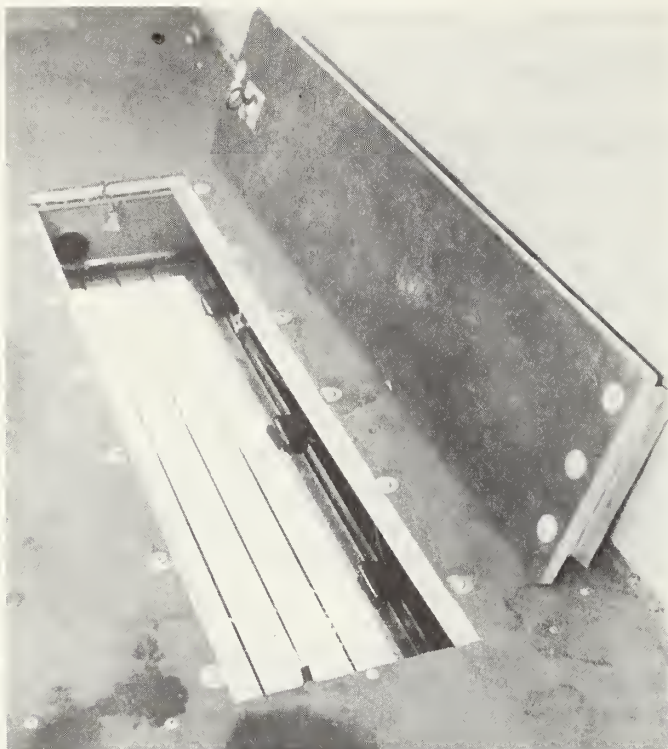


Figure 1
Right side spotter's
floor window in Twin
Beech Model C-45H

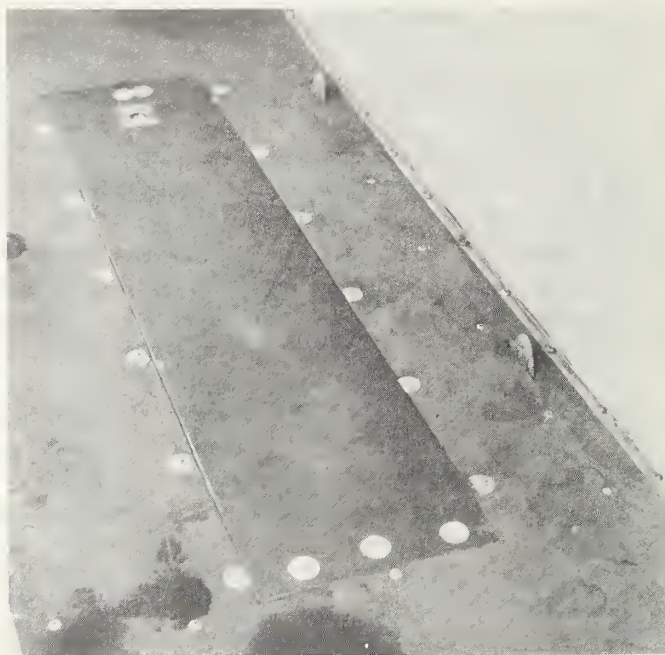


Figure 2
Floor window with cover
plate in place.



SMOKEJUMPER SEAT FOR
TWIN BEECHCRAFT

Figure 3
Folding smokejumper seat in
Twin Beech Model C-45H.

One of the best seats for use with Twin Beechcraft jumper planes is the folding bench which originated in Region 6. This lightweight seat will accommodate four fully suited smokejumpers and is equipped with special seat safety belts.



Figure 4
Seat safety belts are longer than normal to
accommodate fully suited smokejumper.



Figure 5
When not in use, seat folds
against left side wall to
make room for cargo.

It may be folded up
against the left side
wall to provide more
space during cargo
dropping operations
but when jumper runs
are made, extra cargo,
firepacks, water cans,
etc. can be stowed
under the seat. See
Drawing No. ED-200-R1
in Appendix A.



Figure 6
On smokejumper missions, firepacks can
be stowed under the seat.

SMOKEJUMPER STATIC LINE
ANCHOR CABLES FOR
TWIN BEECH AIRPLANES



A variety of static line anchor cable installations have been used in Twin Beechcraft in past years. The one preferred by most smokejumpers is a diagonal cable which runs along the wall opposite the door the full length of the fuselage from the top of the forward bulkhead to the bottom of the rear bulkhead. An aluminum stop block is installed at the bottom of the cable to reduce mutilation of cable fittings near the floor.

Figure 7

Smokejumper static line snap is attached to anchor cable near floor to allow maximum tail clearance during canopy deployment.



Figure 8

Aluminum stop block protects parachute static line snap and anchor bolts.

CARGO DROPPER'S ANCHOR CABLE FOR TWIN BEECH AIRPLANES

A cargo dropper's anchor cable is installed lengthwise along the side opposite the door and near the ceiling and extends full length from front bulkhead to rear. See Drawing No. ED-201-R1 in Appendix A.



Figure 9

Cargo droppers' safety harness is snapped to cable along upper right side and can slide full length of the fuselage.

SMOKEJUMPER STEP FOR TWIN BEECHCRAFT AIRPLANES

A variety of sizes and types of jumper steps has been used on Twin Beechcraft in recent years. The step must be low enough to allow the jumper to sit comfortably in the door without cramping the leg and causing the jumper's back or parachute to hit the top of the door as he stands erect prior to leaving the ship. Most smokejumper units teach new men to place one foot on the step prior to jumping. Others place both feet on the steps. Either method is satisfactory and is a matter of personal preference. The step can be quickly and easily removed but is usually left in place throughout the season. Side plates of expanded metal are used to minimize drag. Abrasive traffic paint is applied to the steps to provide for firmer footing in the aircraft slip stream. See Drawing No. ED-202-R1, Appendix A.



Figure 10
The step is large enough for
both feet but most jumpers prefer
this stance.



Figure 11
Side plates of expanded metal minimize drag.

DOOR SAFETY STRAP AND HANDRAIL FOR TWIN BEECHCRAFT AIRPLANE

An essential safety item is the handrail which encompasses the upper one-half of the door. The door safety strap is permanently fastened to the leading edge handrail. Provisions should be made to fasten the door safety strap forward along the left wall inside the fuselage to prevent it from flailing or entangling during smokejumper or cargo dropping operations. Usually an elastic exerciser cord or looped leather thong is installed in the sidewall forward of the door to engage the snaphook and hold it out of the way. When the folding smokejumper seat is used, a snaphook may be engaged in one of the seat cover lacing cords to serve the same purpose. See Drawing No. ED-204-R1 in Appendix A.



Figure 12
Safety handrail with door strap in place.

CARGO TIEDOWNS FOR TWIN BEECHCRAFT

Our investigation showed that it is feasible to tie down cargo with occasional penalty to elapsed time takeoff objectives. Unless properly used, cargo nets and tiedown ropes impose safety hazards and inconvenience due to their "tanglefoot" characteristics. The fastest and most convenient method of tying down diversified cargo is the cargo net. The cargo net is adaptable to a variety of bundle sizes and shapes and can be installed or removed rapidly.



Figure 13

A cargo net can be used to hold down odd shaped cargo.

A main cargo rope is inserted through floor tiedown rings (Drawing No. ED-205-R1 in Appendix A) to encompass the cargo area on the floor. After cargo bundles are placed within the roped-off space, a cargo net is thrown across the bundles and fastened to the main loop rope by means of bolt snaps attached to the net.

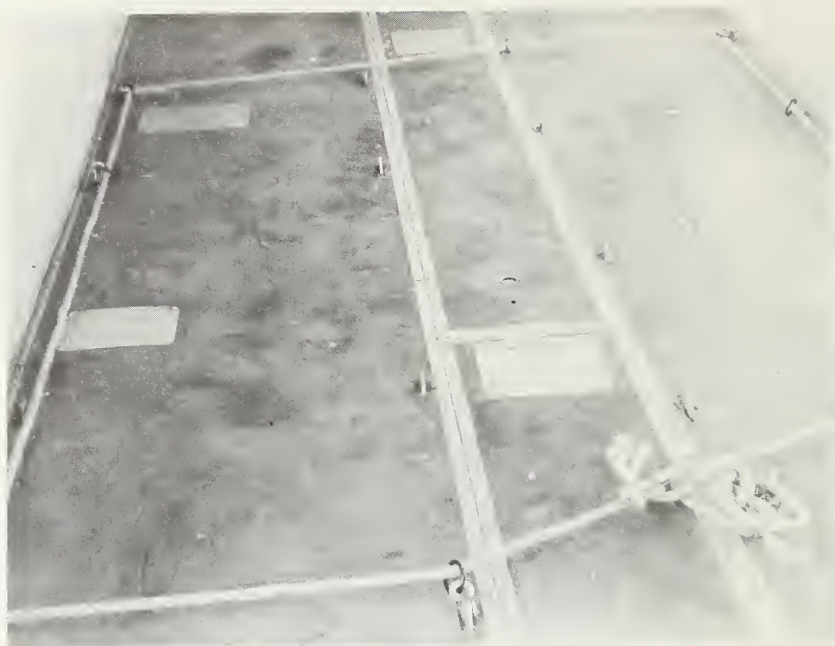


Figure 14
Main cargo rope is inserted through rings attached to seat floor brackets.



Figure 15
Rope snaps attached to perimeter of cargo net are attached to main cargo rope.

The cargo net is faster and holds odd shape loads in place more securely than ordinary rope lashing methods. Cargo nets built to proper dimension for various aircraft can be purchased from most marine supply firms. (See Figure 13).



Figure 16
Unless removed when dropping cargo,
cargo nets may entangle the cargo
dropper's feet.

CARGO TIEDOWN FOR C47A
MODIFIED TO DC-3

Adequate cargo tiedown rings are
easy to install in most DC-3
aircraft. The one most commonly
used is the "Widgit." This is
a common type available from
most aircraft suppliers.

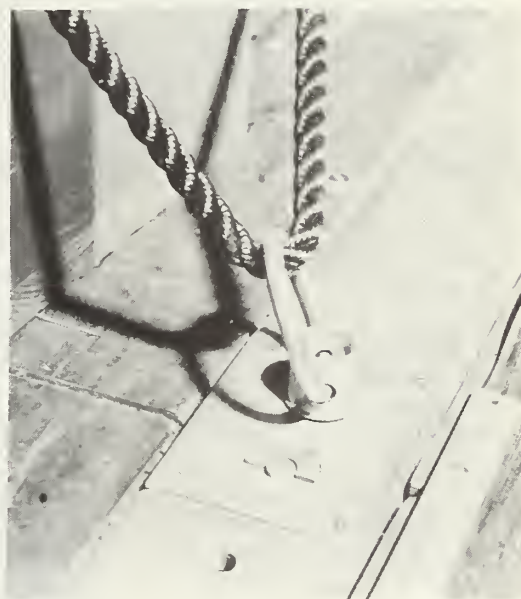


Figure 17
"Widgit" fitting is inserted in floor and
wall brackets to provide tiedown rings.

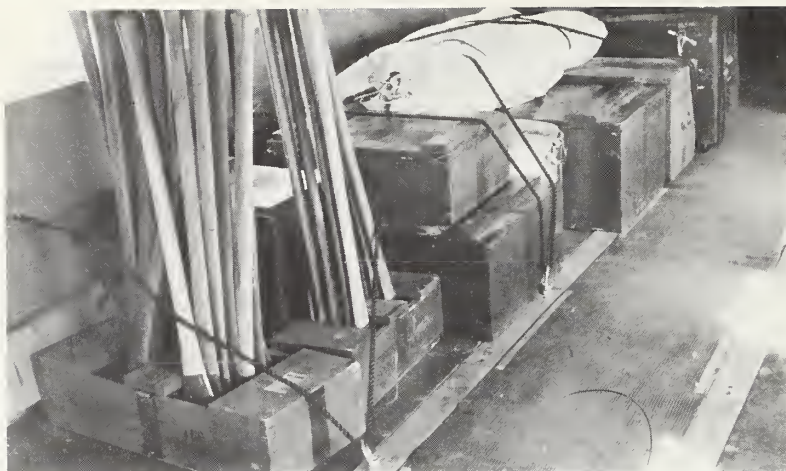


Figure 18

Cargo lashing ropes require more time and "know-how" to install than nets but are easier to remove.

For those models of DC-3 not equipped to accommodate "Widgit" fittings, a simple cargo tiedown can be made by installing plate nuts along the floor spacing to accommodate a bolt and ring as shown in Drawing No. ED-207-R1 in Appendix B. Some DC-3's have provisions for airline passenger seats. Sidewall fittings installed to accommodate airline seats are adaptable to "Widgit" tiedown rings.

ANCHOR CABLE FOR
SMOKEJUMPER STATIC LINES
AND CARGO DROPPERS'
HARNESS FOR THE DC-3

A full length aircraft cable 3/16-inch in diameter is installed in the center of the cabin and near the ceiling of the DC-3 to accommodate the cargo dropper's safety harness. A smokejumper static line anchor cable is attached at the same installation point on the rear bulkhead and runs diagonally across the bulkhead to an attachment in the floor near the rear of the door. (See Drawing ED-206-R1 in Appendix B.)



Figure 19

Cargo dropper's safety harness is snapped to overhead full length cable.

CARGO ROLLER PLATFORM FOR DC-3

A roller platform greatly facilitates the launching of heavy cargo or multiple small bundles. The backend of the platform is elevated by pushing down an actuating cam lever thus freeing cargo rollers so that heavy loads can be easily pushed out. A rubber

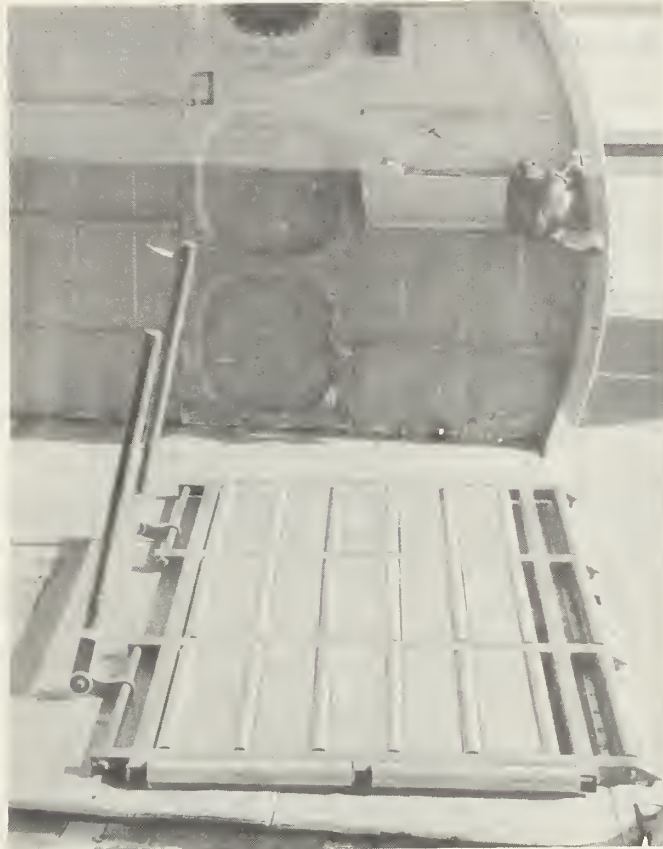


Figure 20

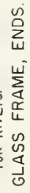
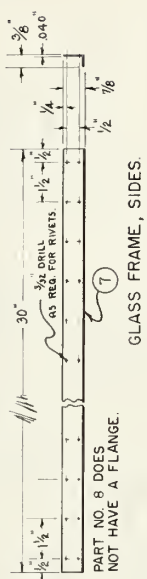
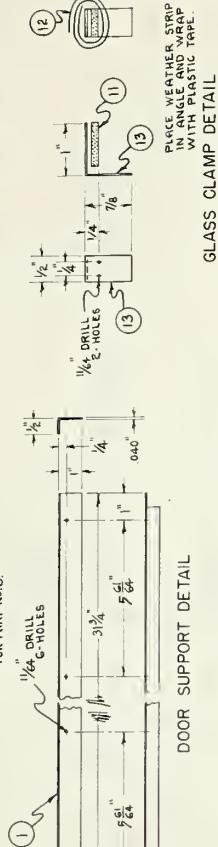
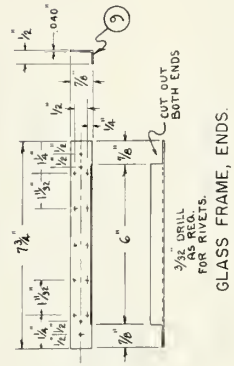
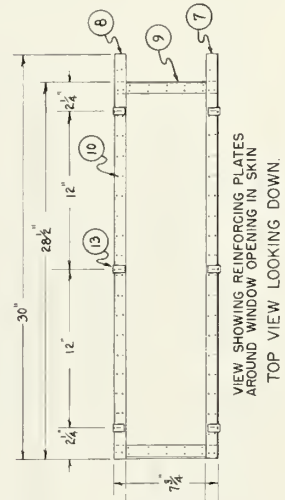
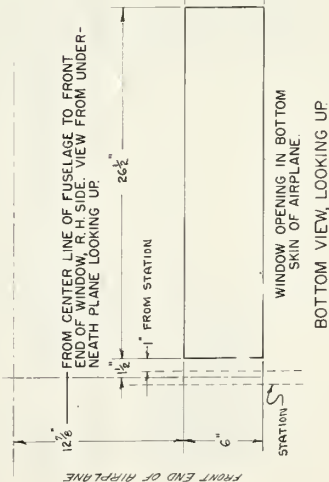
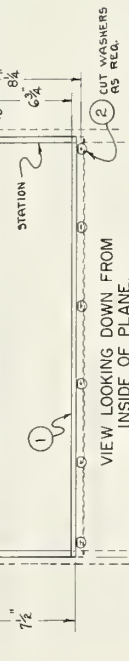
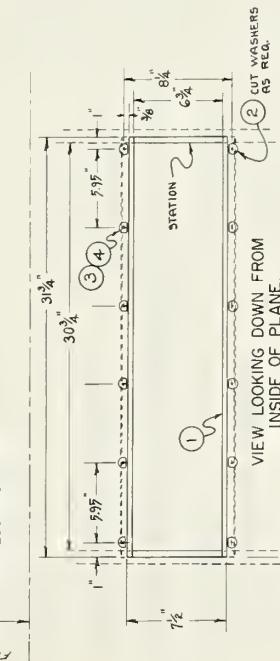
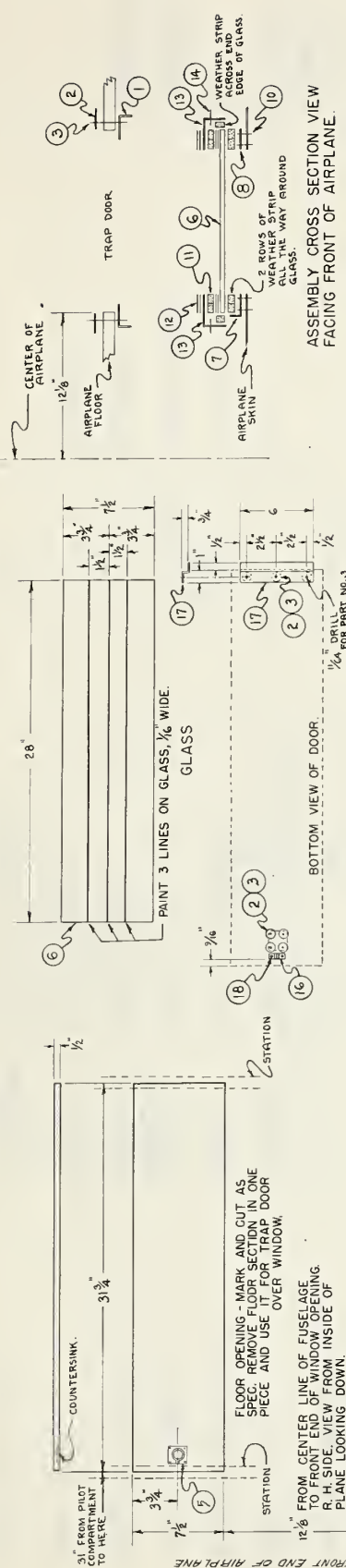
Large cargo doors are removed to install roller platform.

pad on heavy nap carpet is placed beneath the platform to lock rollers when in "down" position. Platform remains in elevated position if actuating lever is completely lowered. See Drawing ED-213-R1, Appendix B.

APPENDIX A

Index of Drawings

Page No.	Drawing No.	Title
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17	ED-200-R1	Smokejumper Seat for Twin Beechcraft Model C-45H
22	ED-201-R1	Anchor Cables for Smokejumper Static Lines and Cargo Droppers Safety Harness for Twin Beechcraft Model C-45H
25	ED-202-R1	Smokejumper Step for Twin Beechcraft Model C-45H
27	ED-204-R1	Safety Handrail for Twin Beechcraft Model C-45H
29	ED-205-R1	Cargo Tiedowns for Twin Beechcraft Model C-45H



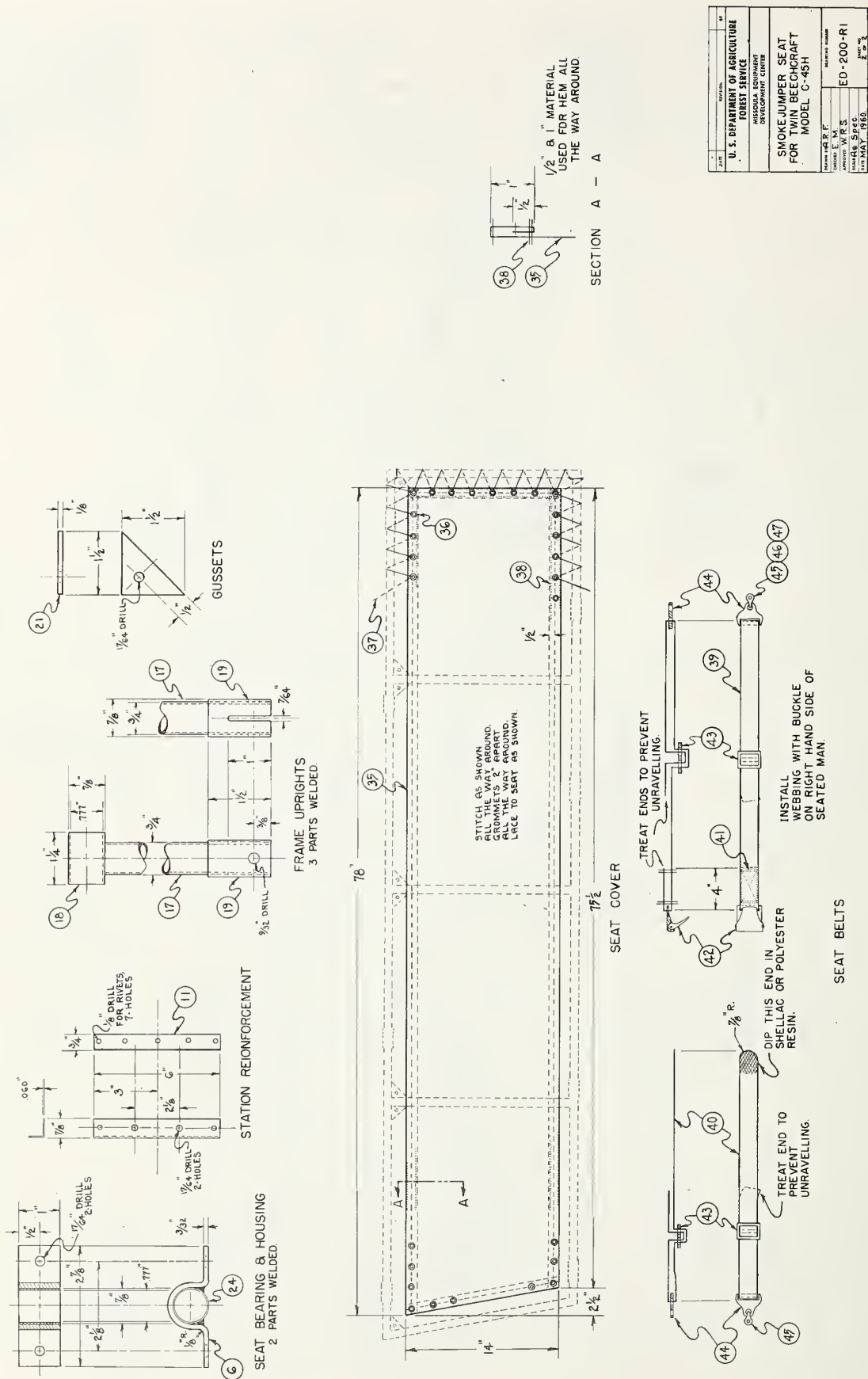
DATE	PERIOD	U. S. DEPARTMENT OF AGRICULTURE FOREST SERVICE MISSOULA NATURAL CENTER	SPOTTERS WINDOW FDR TWIN BEECHCRAFT MODEL C-45H	ISSUED BY G. R. F. E. M. APPROVED W. R. S. ISSUED AS SPEC. MAY 1936.	STATION NO. DATE
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SPOTTER'S WINDOW FOR TWIN BEECHCRAFT MODEL C-45H

Dwg. No. ED-199-RL
May 1960

MATERIALS LIST

Name	Material	Part No.	No. Req.	Cutting Size	Color	Size	Specification or Number	Type
Door Supports	Aluminum	1	2	1 1/2" x 3 1/4"		.040"	As Spec.	
Washers for Parts No. 1, 5, 17	Metal	2	19			1 1/64" I.D. 7/8" O.D.	Modified	
Bolts, Washer	Steel	3	19	7/8" long		8, 32T.	AN 526-14	
Nuts	"	4	12			"	AN 365-832	Plate
Door Lift	"	5	1					
Glass	Glass	6	1	7 1/2" x 28"		3/16"	Modified	Safety
Frame, Glass, Center Line Edge	Aluminum	7	1	1 1/4" x 30"		.040"	As Spec.	
Frame, Glass, Outside Edge	"	8	1	7/8" x 30"		"		
Frame, Glass, Ends	"	9	2	1-3/8" x 7-3/4"		"	As Spec.	
Rivets	"	10	As Req.			3/32"		
Weather Stripping		11		12' 8"		1" x 3/8"		Adhesive
Tape	Plastic	12		As Req.				Adhesive Plastic
Clamp, Glass	Metal	13	6	1/2" x 1-7/8"		.040"	As Spec.	
Bolts, Clamp	Steel	14	12			8-32	AN 526-8-32-8	Aircraft
Nuts for Part No. 14	Steel & Fiber	15	12			1/2" long		
Door Catch	Metal	16	1-unit			8-32	AN 365-832	Fiberlock
Door Heel Catch	Aluminum	17	1	2 1/4" x 6"		.040"	2 Parts	
Screws for Part No. 16	Metal	18	4	1/2" long		No. 5		
Nuts for Parts No. 5 & 17	Steel & Fiber	19	7			8, 32T.		Fiberlock



S. J. SEAT FOR TWIN BEECHCRAFT, MODEL C-45H

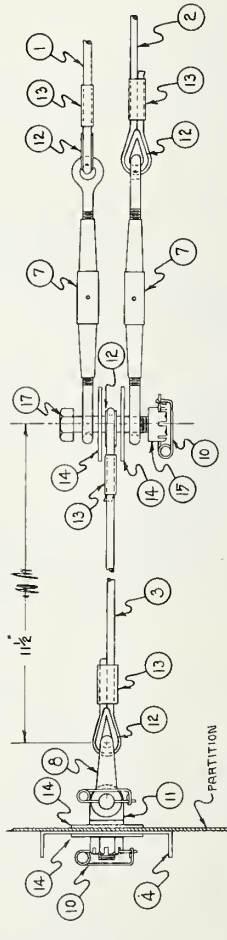
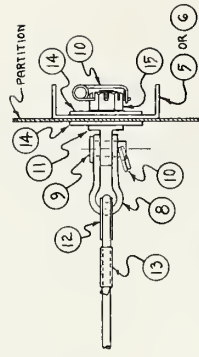
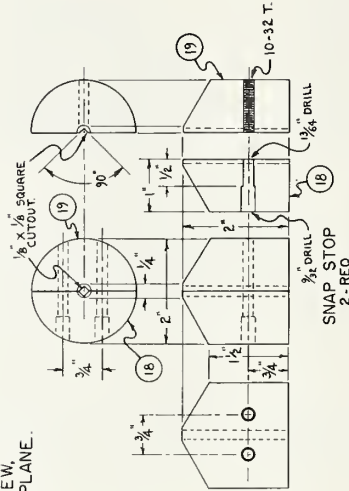
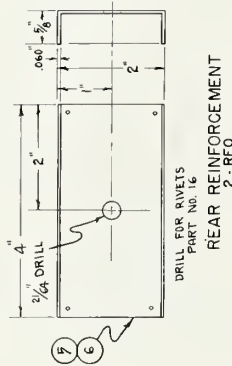
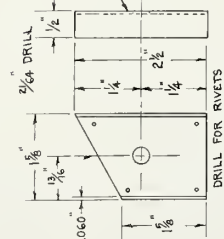
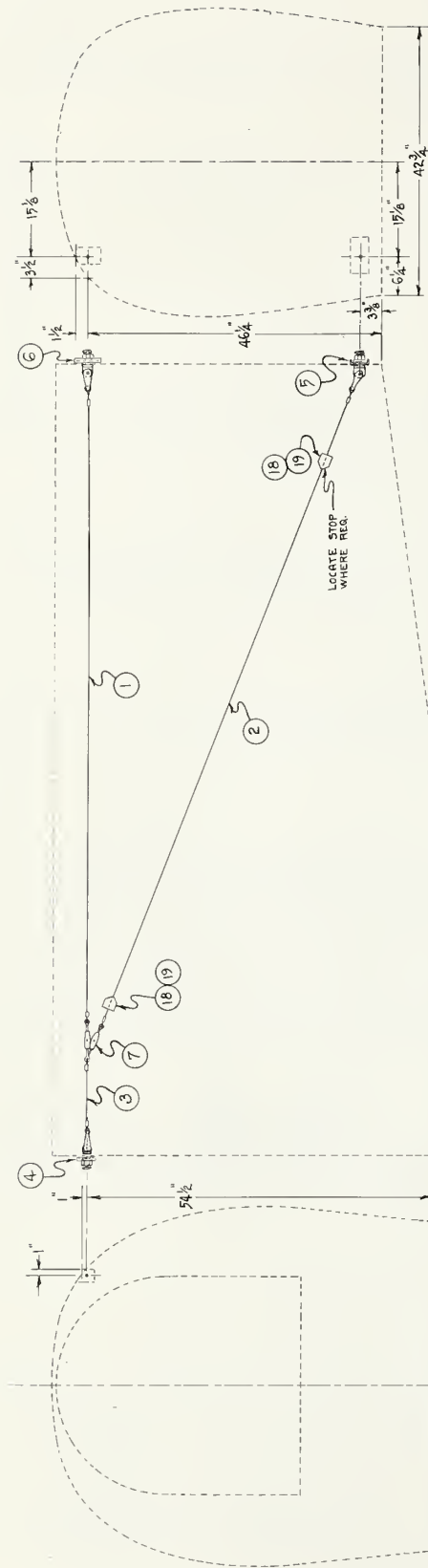
Drawing No. ED-200-R1
May 1960

MATERIALS LIST

Name	Material	Part No.	No. Req	Cutting Size	Color	Size	Specification or Number	Type
Mounting Channel, Front	Aluminum	1	1	3-7/8"x 1 1/4"		.060"	As Spec.	
Mounting Channel Plate, Upper	"	2	1	5"x5"		"	"	
Mounting Channel Plate, Lower	"	3	1	3 1/2"x5 1/4"		"	"	
Mounting Channel, Rear	"	4	1	4"x11"		"	"	
Channel Plates, Rear	"	5	2	5"x5"		"	"	
Housing, Seat Bearing	Steel	6	4			3/32	"	
Bolts, Seat Brackets	"	7	8	3/4" long		1/4", 28T.	AN4-6A	Aircraft
Nuts	"	8	8			1/4", 28T.	AN366-428	Plate Nuts
Rivets, Plate Nuts	Aluminum	9	16			3/32"		
Rivets, For Parts No. 1, 2, 3, 4, 5 & 11		10	As Req.			1/8"		
Station Reinforcement	Aluminum	11	2	1-3/4"x6"		.060"	As Spec.	
Seat Frame, Rear	Steel Tubing	12	1	83"		3/4", 18ga	4130	Aircraft
Seat Frame, Front	"	13	1	79 1/2"		"	"	"
Frame, Front End	"	14	1	18 1/2"		"	"	"
Frame, Rear End	"	15	1	18-3/4"		"	"	"
Frame, Cross Members	"	16	3	17-3/4"		"	"	"
Frame, Uprights	"	17	4	17-9/16"		"	"	"
Upright, Top	"	18	4	1 1/4"		7/8", 18ga	"	"
Upright, Bottom	"	19	4	1 1/2"		"	"	"

MATERIALS LIST

Name	Material	Part No.	No. Req	Cutting Size	Color	Size	Specification or Number	Type
Collars, Frame	Steel Tubing	20	14	1"		7/8", 18ga	4130	Aircraft
Gusset & Seat Belt Fastener	Steel	21	8	1 1/2"x1 1/2"		1/8"	As Spec.	
Bolts for Part No. 19	"	22	4	1 1/4" long		1/4", 28T.	AN4-12	
Nuts	Steel & Fiber	23	4			1/4", 28T.	AN365-428	Fiberlock
Washers, For Part No. 7	Steel	24	8			1"	AN960-416	Plain
Bearing, For Part No. 6	Steel Tubing	25	4			7/8", 18ga	As Spec.	
Seat Panel	Canvas	35	1	17"x81"	Optional	24 oz.	CCC-C-419, No. 4	"I"
Grommets	Brass	36	90		"	No. 2	MIL-G-16491 (Ships) Sym. - A&C	I, Plain
Tie Line	Nylon	37		As Req.	"	550 lb.	MIL-C-5040	III
Thread	Cotton	38			"	12-4	V-T-276	I
Seat Belt, Buckle End	Cotton Webbing	39	4	34"		1-3/4"	MIL-W-5665 (5000 lb.)	X
Seat Belt, Loose End	"	40	4	30"		1-3/4"	MIL-W-5665 (5000 lb.)	X
Thread	Cotton	41				5 cord	35-lb. min. breaking str. Class I	I
Buckle		42	4			2"	Air Associates or equal	
Adapter	Steel	43	8		Cadmium	1-3/4"	USAF #44A9360	Parachute
Lug	"	44	8		"	"	USAF #44B9347-1	"
Shackle	"	45	8				AN115-32	Aircraft
Bolts for Clevis	"	46	8	1" long		1 1/4", 28T.	AN4-10	"



FORK IN CABLES.

DATE	REVISION	BY
U. S. DEPARTMENT OF AGRICULTURE FOREST SERVICE MISSOURI EQUIPMENT DEVELOPMENT CENTER		
ANCHOR CABLES FOR S. J. STATIC LINES & CARGO DROPPERS SAFETY HARNESSES FOR — TWIN BEECHCRAFT MODEL C-45H		
DESIGNED BY	APPROVED BY	DATE
ED-201-RI	ED-201-RI	1956

ANCHOR CABLES FOR S. J. STATIC LINES AND CARGO DROPPER'S SAFETY HARNESS

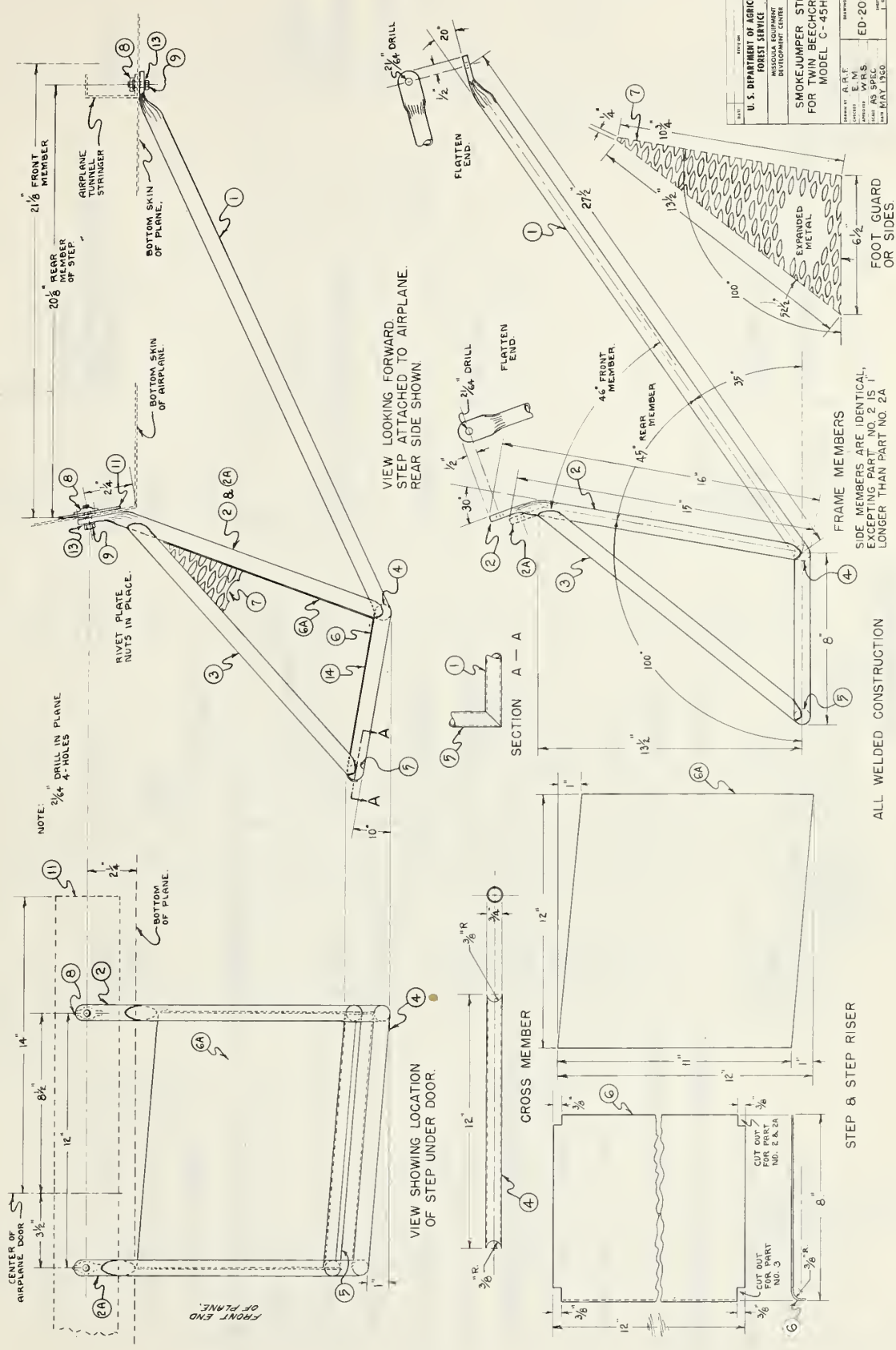
MATERIALS LIST

Twin Beechcraft Model C-45H
Drawing No. ED-201-RL May 1960

Name	Material	Part No.	No. Req	Cutting Size	Color	Size	Specification or Number	Type
Cargo Droppers Cable	Steel	1	1	9'3"		5/32"	Aircraft Steel	7x9
S.J. Static Line Cable	"	2	1	9'10"		"	"	"
Cable, Short	"	3	1	18"		"	"	"
Reinforcement for Cables, Front	Aluminum	4	1	2 1/2"x 2-5/8"		.060	As Spec.	
Reinforcement for Static Line Cable, Rear	"	5	1	3 1/4"x4"		.060	"	
Reinforce. for Cargo Droppers Safety Harness Cable, Rear	"	6	1	"		.060	"	
Turn Buckle Assembly	Steel	7	2				AN140-22	Eye
Clevis, (Shackle)	"	8	3				AN115-32	Aircraft
Clevis Pin	"	9	3			1/4"x19/32	AN394-19	"
Cowling Safety Pins	Spring Steel	10	7				AN416-1 (sp-1)	"
Eye Bolts	Steel	11	3	27/32" long		5/16", 24T.	AN45-6	"
Thimble	"	12	6				AN100-4	Cable
Nicropress Sleeve		13	6			5/32"	AN18-4-P	
Washers	Steel	14	8			1 1/32" I.D. 1-3/8" O.D.		
Nuts for Pt. No. 11 & 17 Rivets, for Parts No. 4, 5 & 6	"	15	4			5/16", 24T.	AN310-524	Slotted
Bolt, Fork	Aluminum	16	12			3/32" D.		Cherry
1/2 of stop	Steel	17	1			5/16", 24T.	AN5-14	Aircraft
1/2 of stop	Aluminum	18	2	2"		2" D.	As Spec.	6ls
1/2 of stop	"	19	2	2"		2" D.	"	6ls

MATERIALS LIST

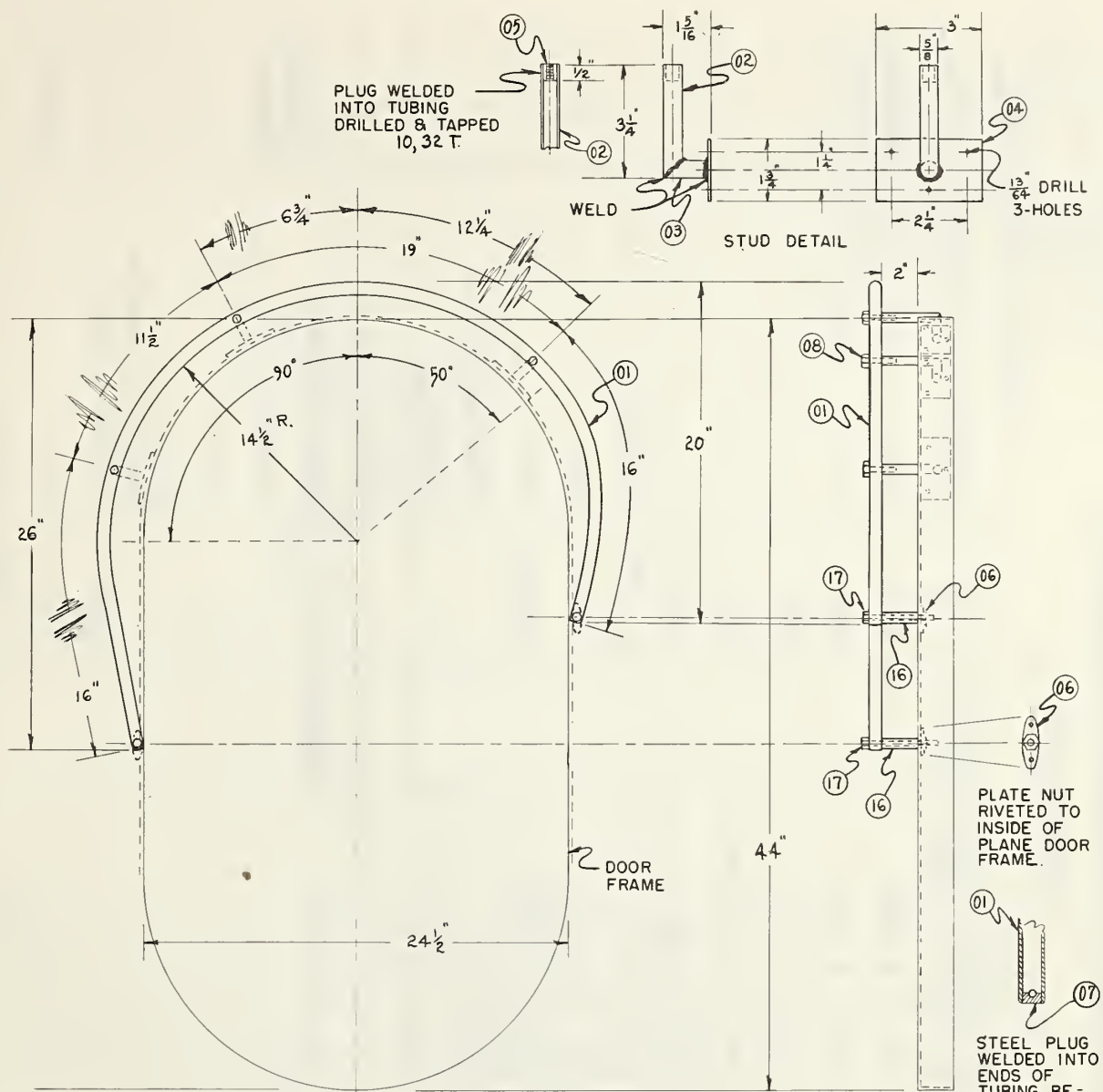
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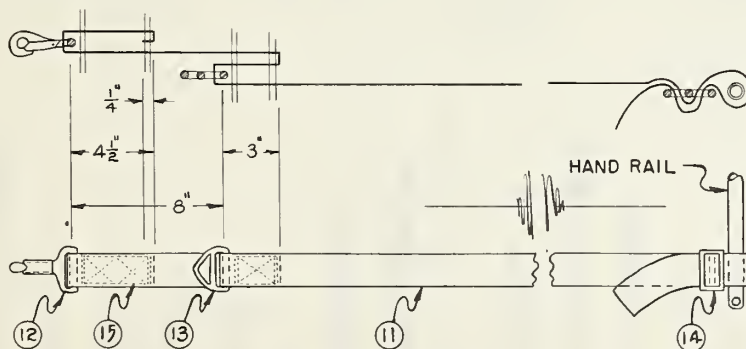
MATERIALS LIST

Drawing No. ED-202-R1 May 1960

Name	Material	Part No.	No. Req.	Cutting Size	Color	Size	Specification or Number	Type
Frame Member, Long	Steel Tubing	1	2	36"		18 ga.	Tubing 4130	
Frame Member, Rear Upright	"	2	1	15-5/8"		18 ga.	" "	
Frame Member, Front Upright	"	2A	1	14-5/8"		"	" "	
Frame Member, Brace	"	3	2	16"		"	" "	
Frame, Cross Member, Back	"	4	1	12"		"	" "	
Frame, Cross Member, Front	"	5	1	12-3/4"		"	" "	
Step	Steel	6	1	12"x8 1/2"		.060"	As Spec.	
Step Riser	"	6A	1	12"x12"		.060"	" "	
Foot Guard	Expanded	7	2				" "	Flattened
Nuts, Plate	Steel	8	4			5/16", 24T.	AN366-524	Plate Nuts
Bolts	"	9	4	3/4" long		" "	AN5-6A	Aircraft
Rivets for Part No. 8	Aluminum	10	8					
Reinforcing Plate	"	11	1	2 1/2"x28"		.040"		
Rivets for Part No. 11	"	12	As Req.			1/8"		
Washers for Part No. 9	Spring Steel	13	4			5/16"	AN960-516 Protective Chromate or Equal	Lock
Step Tread		14						



- HAND RAIL -
VIEW FROM INSIDE OF PLANE
LOOKING OUT.



SAFETY STRAP

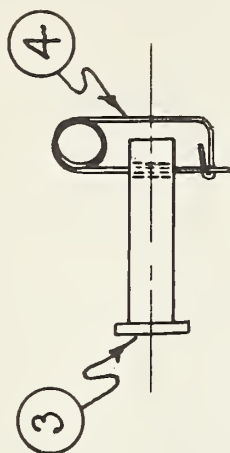
DATE	REVISION	BY
U. S. DEPARTMENT OF AGRICULTURE FOREST SERVICE		
MISSOULA EQUIPMENT DEVELOPMENT CENTER		
SAFETY HAND RAIL FOR TWIN BEECHCRAFT C-45H		
DRAWN BY	ARF	DRAWING NUMBER
CHECKED	E. M.	ED-204-R1
APPROVED	W. R. S.	
SCALE	AS SPEC.	SHEET NO
DATE	MAY 1960	1 OF 1

SAFETY HANDRAIL FOR TWIN BEECHCRAFT - MODEL C-45H

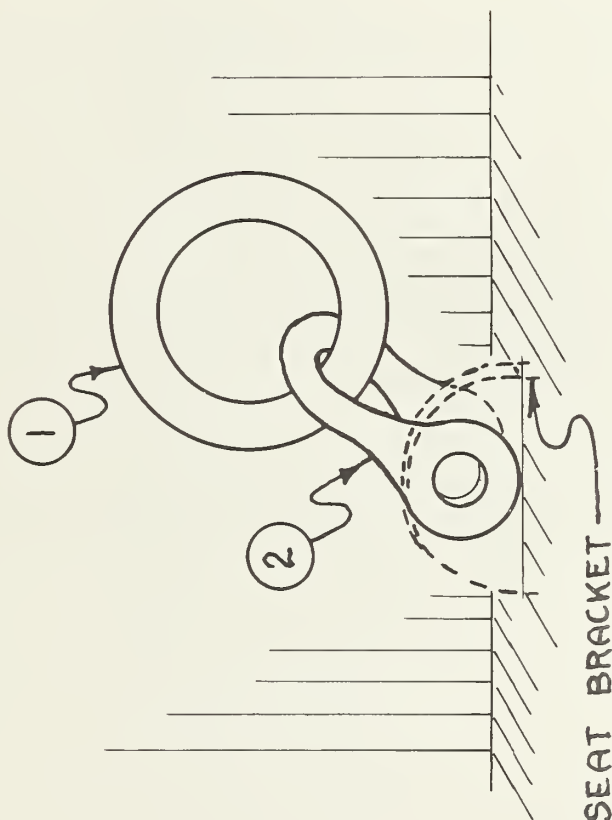
MATERIALS LIST

Drawing No. 204 May 1960

Name	Material	Part No.	No. Req	Cutting Size	Color	Size	Specification or Number	Type
Handrail	Steel Tubing	01	1	62 $\frac{1}{2}$ "		3/4"	4130	Aircraft
Stud Part	"	02	3	3 $\frac{1}{4}$ "		5/8"	"	"
"	"	03	3	1 $\frac{1}{4}$ "		5/8"	"	"
Stud Plate	Steel Plate	04	3	1-3/4"x3"		.049"	"	"
Plug, Stud	Steel	05	3	1 $\frac{1}{2}$ "		.527" D.	"	"
Plate Nut	"	06	2			1/4" - 28T.	AN366-428	"
Plug, Handrail	"	07	2	1 $\frac{1}{4}$ "		.652 D.	4130	"
Bolts, w/Hex. Head	"	08	3	1 $\frac{1}{2}$ " Long		10-32T.	AN3-14	"
Screw Bolts	"	09	9				AN526R-1032-8	"
Nut	"	09A	9				AN-365-1032	"
Rivets, Plate Nut	"	10	4				AN455-4	"
Safety Strap	Webbing	11	1	48"	Optional	1-3/4"	Nylon or Cotton	"X"
Snap	Steel	12	1				43A21538	Parachute Harness
"V" Ring	"	13	1				AN6563-1	"
Adapter	"	14	1				AN6565-1	"
Thread	Nylon or Cotton	15				5-cord	35-lb. min. breaking strength Class I	I
Studs	Steel	16	2	2"		3/8", 18 ga.	4130	Aircraft
Bolts, w/Hex. Heads	"	17	2	2 $\frac{1}{4}$ "		1", 28T.	AN4-22	"



PIN



SEAT BRACKET

ATTACH TO ORIGINAL SEAT
ANCHOR BRACKETS NEXT TO
OUTSIDE WALL.
4 - ON EACH SIDE OF AIRPLANE.

DATE	REVISION	BY
U. S. DEPARTMENT OF AGRICULTURE		
FOREST SERVICE		
MISSOURI AERIAL EQUIPMENT DEVELOPMENT CENTER		
CARGO TIEDOWNS FOR TWIN BEECHCRAFT MODEL C-45H		
DRAWN BY: A.R.F.	CHECKED: E.M.L.	DRAWING NUMBER
APPROVED: W.R.S.		ED-205-RI
SCALE: NO SCALE		SHEET NO.
DATE: MAY 1950.		1 OF 1

Drawing No. ED-205-R1 May 1960

[illegible]

APPENDIX B

Index of Drawings

Page No.	Drawing No.	Title
32	ED-206-R1	Anchor Cables for Smokejumper Static Lines and Cargo Droppers Harness for C-47A Modified to DC-3C-SIC3G
35	ED-207-R1	Cargo Tiedown for C-47A Modified to DC-3C-SIC3G
37	ED-213-R1	Cargo Roller Platform

ANCHOR CABLES FOR S. J. STATIC LINES AND CARGO DROPPERS SAFETY HARNESS
FOR C47A MODIFIED TO DC-3C-SIC3G

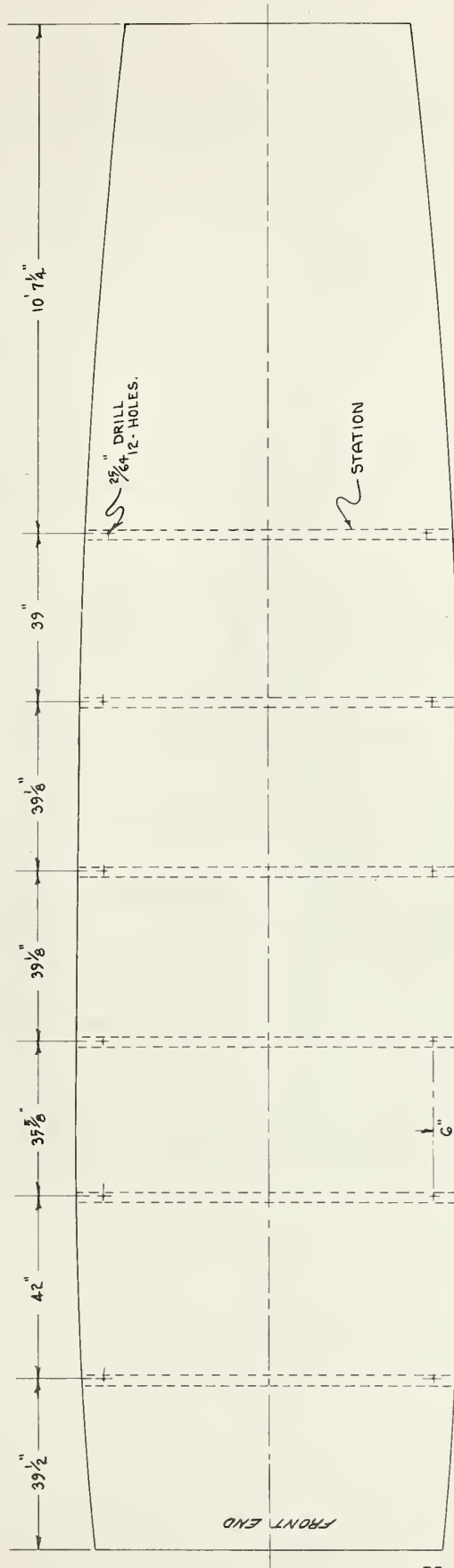
MATERIALS LIST

Drawing No. ED-206-RL
June 1960

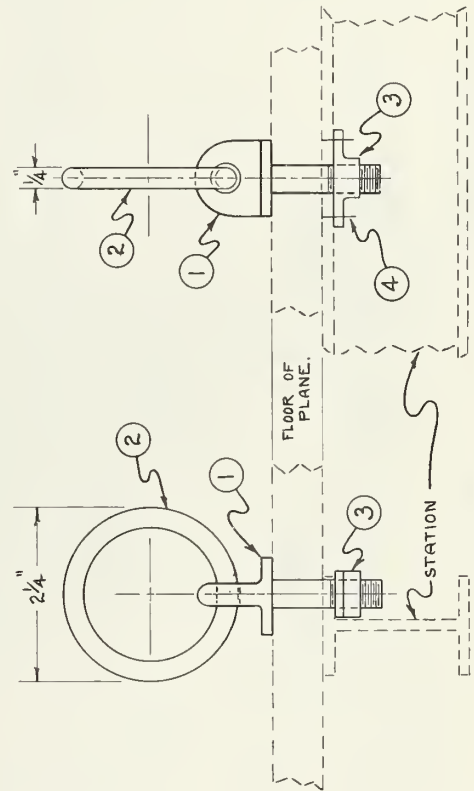
Name	Material	Part No.	No. Req	Cutting Size	Color	Size	Specification or Number	Type
Cargo Droppers Cable	Steel Cable	1	1	29'6"		3/16"	Aircraft	7x9
S. J. Static-Line Cable	"	2	1	76"		5/32"	"	7x9
Bracket, Rear, Ceiling	Aluminum	3	1			3/16"	As Spec., Parts No. A, B & C Welded	
Bolts, for Part No. 3	Steel	4	6			10, 32T.	AN3-5	Aircraft
Nuts, for Part No. 4	Steel & Fiber	5	6			" "	AN365-1032	Fiberlock
Bracket, Front End	Aluminum	6	1	2-1/4"		2"x1-3/8" x5/32"	As Spec.	
Bolts, for Part No. 6	Steel	7	4	5/8" long		10, 32T.	AN3-5	Aircraft
Nuts, for Part No. 7	Steel & Fiber	8	4			10, 32T.	AN365-1032	Fiberlock Internal Threaded
Clevis, Rod	Steel	9	1			1/4", 28T.	AN665-34R	
Rod, Clevis	"	10	1	23"		" "	As Spec.	
Nut, Clevis Rod	Steel & Fiber	11	1			" "	AN365-428	Fiberlock
Turnbuckle Assembly	Steel	12	2			1/4"	AN150-22L	Aircraft
Bolts, for Part No. 12	"	13	4	1" long		1/4", 28T.	AN4-10	"
Nuts	Steel & Fiber	14	4			" "	AN365-428	Fiberlock
Thimble	Steel	15	2			3/16"	AN100-6	Cable
Thimble	"	16	2			5/32"	AN100-5	"
Nicropress Sleeve	Metal	17	2			3/16"	18-6-X	Sleeve
Nicropress Sleeve	"	18	2			5/32"	18-4-P	"
Link	Steel	19	2	3"x7/8"		1/16"	As Spec.	

MATERIALS LIST

Name	Material	Part No.	No. Req	Cutting Size	Color	Size	Specification or Number	Type
Bolt, for Part No. 3	Steel	20	1	1-3/4" long		3/8", 24T.	AN6-16	Aircraft
Washer, for Part No. 20	"	21	1			3/8" I.D. 1" O.D.		Cut
Washer, for Part No. 20	"	22	1			3/8"		Cut
Nut, for Part No. 20	Steel & Fiber	23	1			3/8", 24T.	AN365-624	Fiberlock
Clevis	Steel	24	1			3/8" pin	AN115-46	Aircraft
Strap, Floor	"	25	1	3/4"x3"		1/16"	4130	"
Strap, "	"	26	1	3/4"x3-1/4"		1/16"	4130	"
Bolt, Floor	"	27	1	1 1/2"		3/8", 24T.	AN6-14	"
Plate Nut	"	28	1			" "	AN366-624	"
Rivets for Plate Nut		29	2			As Req.		
Washer, for Part No. 27	Spring Steel	30	1			3/8"	AN-935-616	Lock Washer
1/2 of Snap Stop	Aluminum	31	2	2"		2"D	As Spec.	61S
1/2 of Snap Stop Screw Bolts	"	32	2	2"		2"D	As Spec.	61S
for Parts 31 & 32	Steel	33	4	1" long		10-32T	AN502-16	Aircraft



FLOOR PLAN, INSIDE VIEW
SHOWING LOCATION OF TIE-DOWNS



DATE	REVISION	BY
U. S. DEPARTMENT OF AGRICULTURE FOREST SERVICE		
MISSOURIA EQUIPMENT DEVELOPMENT CENTER		
CARGO TIE-DOWN FOR C47A MODIFIED TO DC-3C-SIC3G		
DRAWN BY	APPROVED	DRAWING NUMBER
A. R. F.	E. M.	ED-207-RI
W. R. S.	A. S. S. P. E. C.	SHEET NO.
DATE	JUNE 1960.	OF 1

CARGO TIEDOWNS FOR DC-3C-SIC3G

Drawing No. ED-207-R1
June 1960

MATERIALS LIST

[illegible]

CARGO ROLLER PLATFORM

MATERIALS LIST

Drawing No. ED-213-R1

Name	Material	Part No.	No. Req	Cutting Size	Color	Size	Specification or Number	Type
Frame Member	Steel	1	4	43"		1-3/8"x .078"		Square Tubing
Frame Member	"	2	6	18"		"		"
Frame Member	"	3	3	1-3/4"		"		"
Cover Support	"	4	15	17-3/4"		3/4"x3/4"x1/8"	See Detail	Angle
Cover Support	"	5	30	3 1/2"		3/4"x3/4"x1/8"	" "	"
Shaft, Roller	"	6	7	59-7/8"		3/8"		Cold Rolled
Shaft, Roller	"	7	1	35-1/8"		"		"
Cotter Pins	"	8	16			3/32"x3/4"		
Lever Rod	"	9	2	21 1/4"		3/4"		Cold Rolled
Lever, Actuating	"	10	2	5"x5 1/4"		1"	See Detail	Steel Plate
Lever, Cross Member	"	11	1	33 1/4"		1-3/8"x .078"		Square Tubing
Lever, Uprights	"	12	2	3"		1 1/2", 18ga.		Round Tubing
Handle	"	13	2	25"		1-3/8", 18ga.		"
Bolt, Wheel	"	14	2	1-3/4" long		5/16", 24T.		
Nuts	Steel & Fiber	15	2			5/16", 24T.		Fiberlock
Cap, Handle	Steel	16	2	1 1/4" D.		18ga.		
Wheel	Bearing	17	4			1-7/8" O.D. .875" bore	N.D. 99 R-14	Sealed Ball
Bushing, Wheel	Bronze	18	4	13/32" long		1" D.	See Detail	
Washers, Wheel	Steel	19	4			5/16"		Cut

MATERIALS LIST

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